Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-18 (Cancelled)

Claim 19 (Previously Presented): A method for determining binding of a species at a lipid-based surface having a local environment at a given pH or surface potential, wherein said binding is effective to alter said pH or potential, the method comprising:

incorporating at said lipid-based surface a probe which comprises a pH- or potential-sensitive fluorophore attached to a steroid, to a head group of a sphingolipid or to a head group of a lipid having at least two chains, each chain comprising at least 14 carbon atoms in length, and wherein each independently said chain is selected from the group consisting of acyl, alkyl or alkenyl, wherein incorporation of the probe at the lipid-based surface is substantially not altered upon binding or dissociation of the species at the lipid-based surface and

observing a change in a fluorescent property of said fluorophore retained at the surface upon binding or dissociation of said species at said lipid-based surface.

Claim 20 (Previously Presented): The method of claim 19, wherein said lipid-based surface is the surface of a lipid bilayer.

Claim 21 (Previously Presented): The method of claim 19, wherein said fluorophore is selected from the group consisting of a pH-sensitive lissamine rhodamine compound, 7-hydroxycoumarin, fluorescein, and pH- or potential-sensitive derivatives thereof.

Claim 22 (Previously Presented): The method of claim 19, wherein said lipid is a phospholipid.

Claim 23 (Previously Presented): The method of claim 21, wherein said phospholipid is a diacyl, dialkyl or dialkenyl phosphatidyl ethanolamine or ceramide phosphoethanolamine.

Claim 24 (Previously Presented): The method of claim 23, consisting of 7-hydroxycoumarin conjugated via a 3-carboxamide linkage to the head group nitrogen of a diacyl, dialkyl, or dialkenyl phosphatidyl ethanolamine, or ceramide phosphoethanolamine.

Claim 25 (Previously Presented): The method of claim 19, wherein said species is a biomolecule having groups which are positively or negatively charged at a selected pH between about 2.0 and 12.0.

Claim 26 (Previously Presented): The method of claim 25, wherein said groups are positively or negatively charged at a selected pH between about 4.5 and 7.5.

Claim 27 (Previously Presented): The method of claim 25, wherein said biomolecule is a nucleic acid.

Claim 28 (Previously Presented): The method of claim 25, wherein said biomolecule is a protein comprising amino acids with acidic or basic side groups.

Claim 29 (Previously Presented): The method of claim 19, wherein said surface comprises groups which are positively or negatively charged at a selected pH between about 2.0 and 12.0.

Claim 30 (Previously Presented): The method of claim 29, wherein said groups are positively or negatively charged at a selected pH between about 4.5 and 7.5.

Claim 31 (Previously Presented): The method of claim 20, wherein said lipid bilayer comprises a lipid having a cationic head group.

Claim 32 (Previously Presented): The method of claim 19, wherein, upon said incorporating, said fluorophore is separated from said surface by a distance equal to or less than 15 nm.

Claim 33 (Previously Presented): The method of claim 19, wherein said lipid or steroid is attached to two or more fluorophores.

Claim 34 (Currently Amended): A method for determining binding of a species at a polymer surface, the species and polymer having at a given pH or surface potential opposite charges so that ~~having a local environment~~ at a given pH or surface potential electrostatic interaction occurs between said species and said polymer surface, wherein said interaction~~,~~ ~~said polymer surface covalently attached to a probe wherein the binding of said species~~ is effective to alter said pH or surface potential of said surface ~~the polymer~~, the method comprising:

observing a change in a fluorescent property of a fluorophore which is covalently attached to the polymer surface upon binding or dissociation of said species to a from said polymer surface ~~upon binding or dissociation of said species at said surface~~.

Claim 35 (Previously Presented): The method of claim 34, wherein said fluorophore is covalently bound to said polymer.

Claim 36 (Previously Presented): A method for determining binding of a species at a surface having a local environment at a given pH or surface potential, wherein said binding is effective to alter said pH or potential, the method comprising:

stably incorporating at said surface a probe which comprises a pH- or potential-sensitive fluorophore attached to a steroid, to a head group of a sphingolipid or to a head group of a lipid having at least two hydrophobic chains, each said chain comprising at least 14 carbon atoms in length, and

observing a change in a fluorescent property of said fluorophore upon binding or dissociation of said species at said surface.

Claim 37 (Previously Presented): The method according to claim 34 wherein the polymer is a cationic polysaccharide.

Claim 38 (Previously Presented): The method according to claim 37 wherein the cationic polysaccharide is dextran.

Claim 39 (Previously Presented): The method according to claim 34 wherein the fluorophore is selected from the group consisting of lissamine rhodamine, 7-hydroxycoumarin, fluorescein, and pH- or potential-sensitive derivatives thereof.